

**Wisconsin River Total Maximum Daily Load  
Response to Public Comments on the Land Cover and Agricultural Management  
Definition within the Upper Wisconsin River Basin Technical Memorandum  
September 12, 2014**



1. **In section 2.2 of the memo you reference using the 2008 USDA Common Land Unit (CLU) to designate land in the conservation reserve program (CRP). Anecdotally, we have heard that CRP land has changed significantly in recent years because of high corn prices. Could you have each county's Land and Water Conservation District (LWCD) comment on the change in CRP land during the years you are modeling?**

***WDNR Response:*** The distribution and acreage associated with CRP land can change annually. The WDNR considered the 2008 CLU definition as representative because our model period is 2002-2013—2008 is nearly central to that period. However, it should be noted to users who are running scenarios, either forecasting or backcasting, that grassland cover coincident with CRP definitions may need to be considered invalid due to the changes you noted.

2. **Section 3.3.5 discusses manure validation and Figure 7 shows the comparison of the DATCP cattle inventory manure amounts and the amount of manure applied using the WDNR approach. The text states that “the estimates only needed to align closely with the cattle inventory values.” A closer look at the data included in Appendix E reveals that the difference in the amount of manure from the DATCP inventory and the WDNR approach exceeds 500 million pounds on an annual basis. That is approximately 25 percent of the manure generated in the six counties detailed in the appendix. This manure, which is excluded from the WDNR model, contains approximately 330,000 pounds of phosphorus. The text implies that this amount of phosphorus is a write-off when considering manure, but it is enormous to the municipalities along the river. To put this amount of phosphorus into perspective, the industrial and municipal wastewater treatment plant point source load was approximately 256,000 pounds in 2011. To ensure that future allocations are fair and proportional for all discharge sources, we ask that WDNR include the 500 million pounds of manure that is not included in the model at this time. The enclosed Table 1 shows these calculations.**

***WDNR Response:*** The approach used by WDNR to estimate manure totals uses similar methods as previously applied in other watershed modeling efforts throughout Wisconsin including the Lower Fox River TMDL. Within the six counties that the WDNR compared the NASS estimate to the WDNR's manure estimate, the deficit (500 million pounds on an annual basis) was a result of our estimates being intended to honor as closely as possible the generalizations the WDNR compiled from county staff, county-level inventories of head cattle, and estimates of typical manure output per animal from DATCP. Using best available information for the entire basin, WDNR applied several assumptions to estimate manure application rates, each had potential error. For example, the DATCP annual cattle counts by county were multiplied by an average annual manure output per animal based on the DATCP Manure Quantity Estimation form (V. 09/01/03). This form provides an average estimate of manure production per cow in both solid and liquid forms for a range of

animal sizes. For example, a 150lbs. calf produces a much smaller amount of manure than a 1400lbs. lactating cow. The WDNR was required to estimate the distribution of cattle sizes on a typical farm, which was done based on advice from county staff, WDNR staff, and crop consultants. As the example shows, the assumptions used for the cattle inventories per county provide one source of error in estimating the amount of manure coming from cattle. As such, we cannot use the DATCP cattle counts as an *exact* validation number – these cattle estimates were provided by NASS and the methodology for estimating them can be seen online ([http://www.nass.usda.gov/Data\\_and\\_Statistics/County\\_Data\\_Files/Livestock\\_Count\\_y\\_Estimates/index.asp](http://www.nass.usda.gov/Data_and_Statistics/County_Data_Files/Livestock_Count_y_Estimates/index.asp)). As such, the NASS data that is serving as the basis of determining a deficit is also an estimate.

Accounting for the amount of manure applied is a critical component of the TMDL source allocation. To that end, it is important to note that this deficit will not manifest in the TMDL model. The TMDL model aims to account for all sources of phosphorus, point and non-point. Fortunately, we have extensive in-stream monitoring data as well as monitoring data from point-source dischargers. As a result, we can, to a large extent, account for the difference between in-stream loads and upstream point-source discharges--that difference being composed of naturally occurring and non-point sources. Ultimately, we will calibrate the TMDL model so all sources fit in-stream monitoring data. There are several phosphorus based factors with respect to manure that can be adjusted during the calibration process including phosphorus content of the manure, incorporation depth, and the manure application rate within specific regions of the model domain. Because point-source loads are well-known, we can independently calibrate non-point load to match in-stream observations.